Elements.

$$T = 1914\ \text{Feb.}\ 11{\cdot}518\ \text{Berlin M.T.}$$
$$\left.\begin{aligned}\omega &= 289^\circ\ \ 2{\cdot}0'\\ \Omega &= 265^\circ\ 45{\cdot}3'\\ i &= \ \ 36^\circ\ 19{\cdot}3'\end{aligned}\right\}1914{\cdot}0$$
$$\log q = 0{\cdot}13179$$

The comet is getting very faint, but for those with larger telescopes the following ephemeris may be useful:—

	R.A. (true)			Decl. (true)		Mag.
	h.	m.	s.	°	′	
July 16	17	50	2	−9	30·6	12·9
17		49	24		21·6	
18		48	48		12·9	
19		48	13	9	4·5	13·0
20		47	41	8	56·3	
21		47	10		48·5	
22		46	41		41·0	
23	17	46	14	−8	33·8	13·1

Comet 1913*f* (Delavan).—For the last few months comet 1913*f* (Delavan) has been lost in the sun's rays, but it will soon now become visible again, and it is expected that it may appear as a naked-eye object. Numerous elements, both parabolic, elliptic, and hyperbolic, have been computed by different workers. Thus Dr. G. van Biesbroeck advocates parabolic elements (*Astronomische Nachrichten,* No. 4739) as follows:—

$$T = 1914\ \text{Oct.}\ 26{\cdot}3000\ \text{Berlin M.T.}$$
$$\left.\begin{aligned}\omega &= 97^\circ\ 28'\ 17{\cdot}4''\\ \Omega &= 59^\circ\ \ 8'\ 46{\cdot}4''\\ i &\doteq 68^\circ\ \ 1'\ 46{\cdot}4''\end{aligned}\right\}1910{\cdot}0\ (\text{Osc. }1914\ \text{Sept. }28{\cdot}0)$$
$$\log q = 0{\cdot}0430113$$

Herr E. E. Kühne calculates his ephemeris (*Astronomische Nachrichten,* No. 4739) on the basis of elliptic elements, which he gives as follows:—

$$T = 1914\ \text{Oct.}\ 26{\cdot}5626\ \text{Berlin M.T.}$$
$$\left.\begin{aligned}\omega &= 97^\circ\ 27'\ \ 8{\cdot}7''\\ \Omega &= 59^\circ\ 10'\ 16{\cdot}3''\\ i &= 68^\circ\ \ 6'\ 23{\cdot}6''\end{aligned}\right\}1914{\cdot}0$$
$$\log q = 0{\cdot}043697$$
$$e = 0{\cdot}999655$$

Messrs. S. B. Nicholson and C. D. Shane (*Lick Observatory Bulletin,* No. 255) do not consider a parabolic orbit to be included within the range of possible solutions, and so advocate a set of hyperbolic elements on which their ephemeris is based. The following are the elements they give:—

$$T = 1914\ \text{Oct.}\ 25{\cdot}8690\ \text{Greenwich M.T.}$$
$$\left.\begin{aligned}\omega &= 97^\circ\ 25'\ 06{\cdot}7''\\ \Omega &= 59^\circ\ 12'\ 41{\cdot}2''\\ i &= 68^\circ\ 00'\ 36{\cdot}9''\end{aligned}\right\}1914.0$$
$$q = 1{\cdot}10333$$
$$e = 1{\cdot}00163$$

The following ephemeris for the current week is based on the computations of Dr. G. van Biesbroeck:

	R.A. (true)			Decl. (true)			Mag.
	h.	m.	s.	°	′	″	
July 16	5	22	31	+33	52	3	6·8
17		24	51	34	10	16	
18		27	14	34	28	36	6·7
19		29	38	34	47	4	
20		32	6	35	5	40	
21		34	35	35	24	24	
22		37	7	35	43	16	6·6
23	5	39	42	+36	2	16	

Attention may be directed to a communication to the Royal Academy of Belgium (*Bulletin de la Classe des Sciences,* 1914, No. 2, p. 101) by Dr. G. van Biesbroeck. In this the author discusses in detail the elements and positions of the comet, and gives an interesting chart of the positions of the comet in the sky (with the sun's positions) extending from September 1, 1913, to July 1, 1915.

Classification of Nebulæ and Star Clusters.—Those who have observed or photographed a large number of nebulæ and star clusters have no doubt experienced the difficulty of classifying them briefly without having to describe each in detail. Nearly every astronomer who has had to deal with a large number of these objects has either adopted a previous system of nomenclature or has formed one of his own based partially on one previously selected. The time seems to have arrived when a universal method of nomenclature should be adopted, and M. G. Bigourdan, in the *Comptes rendus* (No. 26, June 29, 1914, p. 251), discusses the whole question from this point of view. He reviews the systems of W. Herschel, J. Herschel, Schultz, Kobold, Wirtz, Max Wolf, Bailey, etc., and finally submits a scheme which while embodying the chief points and notations of previous classifications appears to be simple, brief, and comprehensive. This scheme should serve as a good basis for discussion, and, even if modified, M. Bigourdan will have done a good service by bringing this subject of classification to a head.

Watts's "Index of Spectra."—The "Index of Spectra" by Dr. W. Marshall Watts is a publication familiar to all spectroscopists, and completes and brings up to date in the forms of appendices the wave-length determinations of the elements. Appendix W, the second of a new series, has just made its appearance, and contains the spectra of chromium, cobalt, copper, dysprosium, erbium, europium, and fluorine, concluding with additions and corrections to Appendix V.

THE NAPIER TERCENTENARY.

THE Napier tercentenary celebration, to be held in Edinburgh under the auspices of the Royal Society of Edinburgh, will open formally on the afternoon of Friday, July 24, when the Right Hon. Lord Moulton will deliver the inaugural address. The same evening the Lord Provost and magistrates will give a reception in honour of the event. On the afternoon of Saturday, the governors of Merchiston Castle School will entertain the members of the congress, who will thus have an opportunity of seeing the very room which John Napier occupied as his study. The divine service in St. Giles' Cathedral on the afternoon of July 26, and the farewell reception given by the president and council of the Royal Society of Edinburgh, form the remaining gatherings of a general nature.

The other meetings will be essentially mathematical in character, and will be held on Saturday forenoon and on the greater part of Monday, in the University, the rooms of the mathematical department, and a number of other rooms and halls in the immediate vicinity being utilised for the purpose.

The general arrangement of the programme is to devote Saturday forenoon to papers and discussions of an historical character. Dr. Glaisher, F.R.S., Prof. Cajori, Prof. Eugene Smith, and others are expected to take part.

On the Monday the communications will refer mainly to the construction of mathematical tables and the methods of calculation. Prof. Andoyer, of Paris, Prof. Bauschinger, of Strassburg, Prof. d'Ocagne, of Paris, and M. Albert Quiquet, the secretary of the Actuarial Society of France, have all agreed to read papers on the subjects with which their names are identified, and well-known representatives from America and the United Kingdom will also be among the speakers.

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Some points of practical interest have been suggested for discussion, *e.g.* a facsimile reprint of the original edition of the "Descriptio," the construction of a table of co-logs to seven figures, the publication of part of Dr. Sang's great volumes of manuscript tables of logarithms and sines.

A particularly interesting feature of the congress will be the exhibits of books, instruments, calculating machines, Napier relics, etc. These are to be arranged in the large examination hall of the University, close to the mathematical department. From Lord Napier and Ettrick and other representatives of the Napier family some interesting portraits and other relics have been received; and Mr. Lewis Evans's remarkable collection of "Napier's Bones," or "Numbering Rods," will form a valuable exhibit in itself. Mr. J. R. Findlay has set out a large selection of portable sundials dating from the sixteenth century. John Napier's own works and the other early editions of logarithmic tables published both in Great Britain and the Continent will be of great interest to all mathematical students. Mr. Roberts has undertaken to set up his tide-predicting machine, and have it in action during the time of the Napier Congress and the succeeding mathematical colloquium. Slide-rules, arithmometers, integraphs, and many other forms of calculating machine, will be of special interest to the practical calculator.

These and many other exhibits are being described in an illustrated handbook which every member of the congress will receive with his membership card.

It is expected that the exhibition will be open to members on Thursday, July 23, or on Friday morning at the latest, so that there will be ample time to view it before the meetings begin.

All members of the congress will have the privilege of using the rooms of the Royal Society of Edinburgh. They will also be elected honorary members, for the time being, of the Edinburgh University Students' Union, where luncheon and other club privileges may be enjoyed.

It should be mentioned in conclusion that the Napier tercentenary celebration has received a remarkable degree of support from individuals and from educational institutions over the whole civilised world. In virtue of this support, the committee has felt justified in preparing beforehand for distribution a handbook full of mathematical lore. In the memorial volume valuable communications will be published, and the salient features of the congress will be recorded.

To all who have thus aided in making the tercentenary celebration of the publication of the first book of logarithms a real success, I wish now to convey the cordial thanks of the general committee of the Napier celebration, and of the council of the Royal Society of Edinburgh, among whom the project first took shape.

C. G. Knott.

THE ROYAL SANITARY INSTITUTE CONGRESS AT BLACKPOOL.

THE twenty-ninth Congress of the Royal Sanitary Institute, held at Blackpool on July 6–11, was well attended, and the addresses, papers, and discussions were well above the average in interest and importance.

Lord Derby, who opened the congress on the Monday, pleaded for greater attention being given to physical and military drill as an aid to hygiene, basing his argument upon the improved physique of the Army, as compared with that of the classes from which they were drawn.

A paper upon the action of some metals upon certain water and other bacteria, presented by Prof. Delepine and Dr. A. Greenwood, gave an account of the recent results of the investigation of the above subject, carried on in the pathology and public health laboratory of the University of Manchester. The detailed results are contained in a series of tables printed in the original paper, and are summarised in the conclusions at which the authors arrive, as follows:—

Pure platinum, gold, and tin, which do not seem to be appreciably acted upon by water, or by the organic media used in the experiments, did not appear to have any action on the four kinds of bacteria experimented upon.

Lead, aluminium, and iron, which were distinctly acted upon, were either without appreciable effect (lead), or had only a slight inhibitory action (aluminium and iron).

Copper, silver, zinc, and mercury had a powerful inhibitory action, and also showed evidence of being acted upon by the media, and of forming certain compounds the nature of which will be discussed elsewhere. In all cases where a marked inhibitory action was produced it was noticed that in reduced doses the metals were also capable of an excitatory action which resulted in increased growth of bacteria.

It will be noticed that all bacteria were not affected in the same way and to the same extent. The action of soft water upon copper and upon lead is very rapid; but while the passage of lead into the water does not appear to affect the bacterial contents, that of copper is attended with complete, or almost complete, sterilisation in about half an hour.

Dr. J. W. Brittlebank, veterinary officer to the Sanitary Committee of the Manchester City Corporation, delivered an address to the Veterinary Section of the congress, in which he dealt chiefly with the milk supply and the provisions of the new Milk Bill, now before the House of Commons. His own views are summed up in the following paragraphs:—

"Public attention has been directed for many years past to the question of the milk supply, and there is little doubt that considerable progress and improvement has been made in the general conditions; but there is, I am afraid, a constant danger of allowing ourselves, when considering the question, to drift into one of its side-issues, namely, the elimination of tuberculous milk. Doubtless this is a most important question, perhaps the most important aspect, but in considering this we are apt to forget the other branches of the problem.

"Our aim should be to put within the reach of everybody a supply of good, clean, disease-free raw milk, which may be consumed in any quantity with safety. It is perfectly true that many are so unfortunately situated, as to be able to purchase only the most meagre amounts, but they have just as much right to protection as their more fortunate brethren.

"The whole question teems with difficulties, and requires great qualities of statesmanship in its handling. The business aspects of the question are important, inasmuch as the price of the article to the consumer is of paramount importance. Certain it is that improvement in conditions cannot be obtained without enhancing the value of the article produced, and it behoves all concerned to restrict the requirements asked for, within such limits as may be regarded to be the minimum of safety."

In the Preventive Medicine Section, Dr. Arthur Sellers, lecturer on comparative pathology in the University of Manchester, read a paper on the blood changes in lead workers, giving the results of investigations carried on in the public health laboratory of that University. The chief object of this investiga-

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